AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

Claim 1 (Currently amended): A method of ligating a double-stranded end of a double-stranded DNA and a single-stranded end of another double-stranded DNA, wherein the method comprises:

a) contacting, in the presence of a homologous recombinant protein, the single-stranded end of said other double-stranded DNA and the double-stranded end of said double-stranded DNA, wherein said double-stranded DNA comprises a sequence that is homologous to the nucleotide sequence of said single-stranded end, to form a three-stranded structure comprising said single-stranded end and said double-stranded end, and

b) completing the ligation by converting the three-stranded structure into a double-stranded structure by inserting the DNA complex comprising the three-stranded structure into cells and replicating it therein.

Claim 2 (Previously presented): The method of ligation of claim 1, wherein said three-stranded DNA structural complex is a circular DNA complex having a three-stranded

structure in two positions, wherein said three-stranded structure is made by either the ligation of:

a) a double-stranded DNA comprising a single-stranded region at both ends, and

b) a double-stranded DNA having at both ends a double-stranded region comprising sequences that are respectively homologous to said single-stranded nucleotide regions in a); or the ligation of:

c) a double-stranded DNA comprising a singe-stranded region at one end and a double-stranded region at the other end, and

d) a double-stranded DNA comprising a double-stranded region at one end having a sequence that is homologous to the nucleotide sequence of said single-stranded nucleotide region in a) and a single-stranded region at the other end comprising a sequence that is homologous to the nucleotide sequence of the double-stranded nucleotide region in a).

Claim 3 (Previously presented): The method of ligation of claim 2, wherein the nucleotide sequences of the two single-stranded regions in a) are mutually non-complementary.

Claim 4 (Previously presented): The method of ligation of claim 2, wherein the two single-stranded region ends in a) are within the same double-stranded DNA.

Claim 5 (Previously presented): The method of ligation of claim 2, wherein one DNA from a) and b) or one DNA from c) and d) confers the ability of auto-replicating within competent cells.

Claim 6 (Currently amended): The method of ligation of claim 5, wherein the other DNA comprises the whole or part of ~~the~~ a gene to be cloned.

Claim 7 (Previously presented): The method of ligation of claim 1, wherein the nucleotide sequence of the single-stranded region is at least a 6mer.

Claim 8 (Original): The method of ligation of claim 1, wherein the homologous recombinant protein is selected from a group consisting of the Rec A protein and proteins that are functionally similar to the Rec A protein.

Claim 9 (Original): The method of claim 1, wherein the contact is done furthermore under the presence of nucleoside triphosphate or a derivative thereof.

Claims 10-11 (Canceled)

Claim 12 (Previously presented): The method of ligation of claim 1, wherein the insertion of the DNA complex comprising a three-stranded structure into cells is done by electroporation.

Claim 13 (Previously presented): The method of ligation of claim 1, wherein the conversion of the three-stranded structure to a double-stranded structure is done by a nucleic acid modification enzyme.

Claim 14 (Previously presented): The method of ligation of claim 1, wherein said method further comprises steps of converting the three-stranded structure into a double-stranded structure by treating the DNA complex having the three-stranded structure with an endonuclease, inserting said treated DNA complex into cells, and culturing the transformant thus obtained to amplify DNA.

Claims 15-20 (Canceled)

Claim 21 (Currently amended): A gene-cloning kit ~~comprising~~ consisting essentially of the following components:

a) ~~a DNA, which is~~ a double-stranded DNA comprising a single-stranded ~~region~~ regions at both ends, wherein the nucleotide sequences of these single-stranded regions are mutually non-complementary, ~~and furthermore~~ wherein said DNA comprises a DNA sequence which confers to the double-stranded region of said ~~double-stranded~~ DNA, the ability of auto-replicating within competent cells;

b) an oligonucleotide primer comprising as a part of the 5' end sequence, a sequence that is complementary to ~~the~~ one single-stranded region of the

nucleotide sequence of (a), and is complementary to a part of ~~the~~ one end of the sequence of ~~the~~ a gene to be cloned~~, and~~;

c) an oligonucleotide primer comprising as a part of the 5' end sequence, a sequence that is complementary to the other single-stranded region of the nucleotide sequence of (a), and is complementary to a part of the other end of the sequence of the gene to be cloned; and

d) a homologous recombinant protein.

Claim 22 (Previously presented): The kit of claim 21, wherein the nucleotide sequence of each single-stranded region is at least 6mer.

Claim 23 (New): The method of ligation of claim 1, wherein steps a) and b) take place in the absence of DNA ligase.

Claim 24 (New): The method of ligation of claim 1, wherein double-stranded structure resulting from step b) has not gaps.